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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/682,331

08/21/2001

Guido Gentner

112740-278

6792

29177 7590 02/22/2007
BELL, BOYD & LLOYD, LLP
P.O. BOX 1135
CHICAGO, IL 60690

EXAMINER

BELLO, AGUSTIN

ART UNIT

PAPER NUMBER

2613

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/22/2007

PAPER --

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/682,331

Applicant(s)

GENTNER ET AL.

Examiner

Agustin Bello

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6, 7, 17 and 19-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 7, 17 and 19-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 4, 6-7, 17, 19-23, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonnedal (U.S. Patent No. 6,246,514) in view of Grubb (U.S. Patent No. 6,344,922).

Regarding claims 1 and 19, Bonnedal teaches providing at least two tilt control units (reference numerals 21, 22 in Figure 5) which operate at different speeds to set tilting of a spectrum of data signals in the optical data transmission path (column 3 lines 53-57); measuring a change in overall power in the optical data transmission path via a quicker operating control unit (reference numeral 23, 24, 21 in Figure 5) of the two control units, the quicker operating control unit being connected to at least one filling light source (reference numeral 12 in Figure 5) for pumping a transmission fiber of the optical transmission path; immediately compensating the tilting (column 3 lines 53-57) using Raman effect by changing the power of the at least one filling light source (reference numeral 12 in Figure 5), then returning the power of the at least one filling light source gradually in the direction of an original state existing before the change in overall power using at a slower operating control unit (reference numerals 16, 27, 28, 31, 22 in Figure 5) of the at least two control units. Bonnedal differs from the claimed invention in that

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Bonnedal fails to specifically teach that the wavelength of the at least one filling light source lies within a transmission usable wavelength band. However, Grubb in the same field of optical amplifiers teaches that it is well known in the art to use wavelengths of a filling light source that lies within a transmission usable wavelength band (column 7 lines 43-55). One skilled in the art would have been motivated to use wavelengths of a filling light source that lie within a transmission usable wavelength band in order to provide gain across the entire optical fiber transmission wavelength range (column 7 lines 38-42). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use wavelengths of a filling light source that lie within a transmission usable wavelength band.

Regarding claims 2 and 21, Bonnedal teaches incorporating a time delay (reference numerals 13, 23, 24, 21 in Figure 5; the fiber between elements 13 and 11 in Figure 5) in the signal in the optical data transmission path between measurement of the overall power and injection of the at least one filling light source.

Regarding claims 4 and 25, Bonnedal teaches a power-controlled EDFA (reference numeral 11 in Figure 5), wherein the influencing of the tilting of the spectrum is at least additionally performed by the power-controlled EDFA.

Regarding claims 6 and 20, the combination of references and Grubb in particular teaches that the at least one injected full light source is injected at a start of the optical data transmission path (reference numeral 26 in Figure 5(b)).

Regarding claim 7, the combination of references and Grubb in particular teaches that the at least one injected full light source is injected at an end of the optical data transmission path and counter to a direction of transmission (reference numeral 123 in Figure 5(b)).

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Regarding claims 17 and 27, Bonnedal teaches that the at least one slower control unit comprises a slow-power controlled EDFA (reference numeral 22, 11 in Figure 5) connected to at least one pump source (reference numeral 12 in Figure 5) of a doped fiber.

Regarding claim 22, Bonnedal teaches that the delay element is a fiber with a low dispersion (e.g. the fiber between the elements 13 and 11 in Figure 5; or the fiber between elements 13 and 23 in Figure 5) and a fiber doped with a rare earth element (e.g. the EDFA 11 in Figure 5).

Regarding claim 23, Bonnedal teaches that the at least one filling light source has a single frequency (inherent).

Regarding claim 26, Bonnedal teaches that the at least one path section includes at least one element (reference numeral 11 in Figure 5) which is one of a filter and an amplifier, with a respective frequency-dependent transmission characteristic and a gain characteristic, as well as downstream overall intensity meters (reference numeral 16, 27, 28, 31, 22 in Figure 5), including an evaluation unit (reference numeral 22, 29, 31, 32, 15 in Figure 5) for determining the tilting.

3. Claims 3 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonnedal in view of Grubb, as applied to claim 1 above, and further in view of Suzuki (U.S. Patent No. 6,400,497).

Regarding claims 3 and 24, the combination of Bonnedal and Grubb fails to specifically teach that the influencing of the tilting of the spectrum is additionally performed by the controllable filter. However, Suzuki in the same field of optical amplifiers, teaches that this concept is well known in the art (reference numeral 5 in Figure 1). One skilled in the art would

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have been motivated to include a controllable filter in order to allow gain equalization over a broader input power signal (column 2 lines 5-7 of Suzuki). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include a controllable filter in the device of the combination of Bonnedal and Grubb.

Response to Arguments

4. Applicant's arguments filed 1/18/07 have been fully considered but they are not persuasive. The applicant argues that the control units of Bonnedal do not bear any relationship to controlling tilt. However, the examiner disagrees. As noted in Bonnedal's Figure 2, a difference in power between a high frequency signal (e.g. 8b) and a low frequency signal (e.g. 8a) exists, and therefore a spectral tilt exists between the two signals. Bonnedal specifically seeks to equalize, and therefore, set the tilt to zero of the spectrum of data signals in the optical transmission path by controlling the gain or output power of the optical amplifier. As such, Bonnedal clearly continues to meet the limitations of the amended claim as noted in the rejection above.

Next, the applicant argues that the amended claim language distinguishes the claimed invention from the cited prior art since Bonnedal is silent regarding the use of Raman effect for compensating tilting. However, a structural difference between the claimed invention and the prior art must exist in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the claimed use, then it meets the claim. Furthermore, as the applicant will clearly appreciate, the Raman effect is omnipresent in optical systems that use a physical medium such as fiber to transmit optical signals. As such, the Raman effect is inherent and can be further induced in the system of Bonnedal. Being that the applicant

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induces the Raman effect by changing the power of the at least one filling light source, the examiner argues that Bonnedal's change in the power of the filling light source also induces the Raman effect and immediately compensates the tilting as claimed.

Finally, the applicant has requested a more detailed reference to the documents to provide a clearer rationale as to how Bonnedal meets the applicant's claim to return the power of the at least one filling light source gradually in the direction of an original state existing before the change in overall power using a slower operating control unit. In response, the examiner notes that Bonnedal discloses that the feed-forward portion of the system is imperfect in that, while providing rapid power control, it requires a lot of knowledge of the behavior of the system (column 3 lines 36-42) and suggest that the feed-forward system has the tendency to overshoot the desired level. Bonnedal remedies this concern by also providing a feed-back portion in the system which observes and adjusts the output power of the optical amplifier (column 3 lines 45-57). In disclosing the system's ability to make adjustments via feedback (column 3 line 57 – column 4 line 9), the examiner believes that Bonnedal meets the applicant's claim to returning the power of the at least one filling light source gradually in the direction of an original state existing before the change in overall power using a slower operating control unit by teaching a slower operating control unit that, when the faster control unit causes the output power of the optical amplifier to overshoot the desired value, gradually returns the channel output power of the amplifier towards the desired lower level, and hence towards the original state existing before the change in overall power caused by the feed-forward portion of the system.

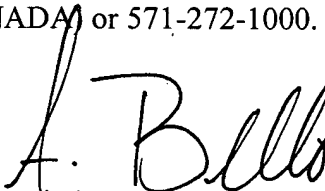
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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Agustin Bello
Primary Examiner
Art Unit 2613

AB